REMARKS

Entry of the foregoing amendments and remarks and favorable examination and reconsideration of the subject application, as amended and in light of the remarks which follow, are respectfully requested.

By the present amendment, Claim 27 has been cancelled without prejudice to Applicants' right to prosecute the canceled subject matter in any divisional, continuation, continuation-in-part or other application. Claims 31 to 33, 35 and 37 have been amended to further clarify the invention. Claim 38 has been added. Applicants submit that no new matter is believed to have been added via this amendment.

The prior substitute specification filed on September 6, 2006, has not been entered because the prior specification allegedly does not accurately show the change in format of the provision of SEQ ID NOs for the primers on page 14 and the first sequence on page 9. Applicants are enclosing a new substitute specification and a marked up copy.

Furthermore the Examiner maintains that it is not clear where the support is found for the changes made in Figures 1 and 3 on page 9. Applicants submit that support for the change in Figure 1 appears at least on page 9, paragraph 5, first line of the specification. Figure 3 no longer has the modification to E.

The Examiner also maintains that the specification does not comply with the sequence listing rules, the title of the invention is not descriptive and that a new Abstract should be submitted.

Applicants have amended the title to recite "DNA sequences encoding peptide sequences specific for the hepatic stages of *P. falciparum* bearing epitopes capable of stimulating the T lymphocytes".

I. OBJECTION TO THE SPECIFICATION

The substitute and marked up specification should now comply with the sequence listing.

Therefore, in view of these amendments, withdrawal of these objections is respectfully requested.

II. OBJECTION TO CLAIM 31

Claim 31 has been objected to for lacking a sequence identification number. Claim 31 has been amended to insert SEQ ID NO: 38, which should render this objection now moot. Accordingly, withdrawal of the objection is requested.

III. REJECTION UNDER 35 U.S.C. §101

Claims 27, 31, 32, 35 and 37 stand rejected under 35 U.S.C. §101 as allegedly being directed to non-statutory subject matter. These claims have been amended to recite "isolated," which should render this rejection now moot. Accordingly, this rejection may be properly withdrawn.

IV. REJECTION UNDER 35 U.S.C. §112, SECOND PARAGRAPH

Claims 31 to 33 and 37 stand rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite. The parentheses have been removed from the sequence identifiers in these claims. Therefore in view of the above, withdrawal of this rejection is respectfully requested.

Claims 32, 33 and 37 stand rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite. Claims 32 has been amended to recite SEQ ID NO: 38. This rejection should be rendered moot by the amendment. Therefore, withdrawal of this rejection is respectfully requested.

V. REJECTION UNDER 35 U.S.C. §112, FIRST PARAGRAPH

Claims 27, 32, 35 and 37 stand rejected under 35 U.S,C. §112, first paragraph as allegdly failing to comply with the written description requirement. For the following reasons, this rejection is respectfully traversed.

In rendering this rejection the Examiner deems that there is no written description for "an epitope effective portion thereof for claim 32." Applicants respectfully disagree with the Examiner's conclusion for the following reasons.

The issue at hand is whether the skilled artisan at the time of filing of the application could determine whether the inventors had possession of an epitope effective portion of the first 153 amino acids of SEQ ID NO.: 38. Applicants submit that the specification provides written description such that a person skilled in the art

would know that the inventors had possession of the claimed invention.

The specification clearly provides the sequence of SEQ ID NO.: 38 and the first 153 amino acids. Therefore, the person skilled in the art would be provided with a known sequence to determine the antigenic epitopes.

The specification also discloses how to synthesize the amino acid sequence and that T epitopes are found in the nonrepetitive part of the protein. Moreover, the methods for the identification of T and B epitopes is given throughout the examples in the specification. For example, by immunization in an animal model and the examination of biopsies for the existence of a cellular reaction, lymph-monocytic, around the hepatic schizonts, infiltrating the schizonts and the destruction thereof, the T epitopes can be ascertained.

Moreover, the skilled artisan would realize from the teachings in the specification that T epitopes were in fact present in SEQ ID NO: 38. This is evidenced in the examples with respect to the clone DG536, which includes non-repetitive repeats and has T and B epitopes as set forth at least on pages 30 to 33 of the specification.

Thus, Applicants submit that the skilled artisan would appreciate that the inventors did in fact have possession of the claimed invention.

In view of the above, withdrawal of this rejection is respectfully requested.

VI. REJECTION UNDER 35 U.S.C. §102(b)

Claims 27, 32 and 35 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Guerin-Marchand *et al.* (Nature 329:164-167). Claims 27 has been canceled, thus the rejection is moot with respect to this claims. As far as this rejection pertains to the newly amended claims, this rejection is respectfully traversed.

Guerin-Marchand *et al.* disclose a molecule expressed specifically during the hepatic phase, which was identified by screening a library of genomic DNA cloned in an expression vector with polyclonal sera. This molecule is a Liver Stage Specific antigen and consists of 17 repetitive amino acids, which are representative by the formula:

Leu-Ala-Lys-Glu-Lys-Leu-Gln-X-Gln-Gln-Ser-Asp-Leu-Glu-Gln-Glu-Arg where X is Glu or Gly.

Claim 32 recites an amino acid sequence having the first 153 amino acids of SEQ ID NO: 38. The Guerin-Marchand *et al.* reference does not teach the sequence as set forth in Claim 32. Furthermore, the particular sequence described in Guerin-Marchand *et al.* resides at amino acid positions 289 to 306 of SEQ ID NO: 38 and not within the first 153 amino acids as recited in Claim 32. For the convenience of the Examiner, Applicants are enclosing Annex I, which depicts SEQ ID NO: 38 and sequences found in the art.

For at least the foregoing reasons, Guerin-Marchand *et al.* do not anticipate Applicants' claimed invention. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 27, 32 and 35 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,602,031. Claims 27 has been canceled, thus the rejection is moot with respect to this claims. As far as this rejection may pertain to the newly amended claims, this rejection is respectfully traversed.

U.S. Patent 5,602,031 describes the same sequence as that in the reference of Guerin-Marchand *et al.*, as well as additional repetitive sequences, which are found at the 3' end of SEQ ID NO: 38.

Claim 32 recites that the isolated DNA encodes a polypeptide which consists of the first 153 amino acids of SEQ ID NO.: 38. The sequences described in U.S. Patent 5,602,031 are not recited in the rejected claims, as demonstrated in Annex I.

Thus, the 5,602,031 patent cannot anticipate Applicants' claimed invetnion. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 27 and 32 have been rejected under 35 U.S.C. § 102(b) as being anticipated by WO 88/05785, a translation of the disclosure of which is found in U.S. Patent 5,599,542. Claims 27 has been canceled, thus the rejection is moot with respect to this claims. As far as this rejection pertains to the amended claims, it is respectfully traversed.

WO 88/05785, whose U.S. counterpart is U.S. Patent 5,599,542 is a divisional of U.S. patent application Serial No. 275,139, which issued as U.S. Patent 5,599,542. For the same reasons as set forth above, and incorporated herein by reference, Claim 32 is not anticipated by this patent application or patent.

Accordingly, withdrawal of this rejection is respectfully requested.

Claims 27 and 32 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Zhu *et al.* Claims 27 has been canceled, thus the rejection is moot with respect to this claims. The Zhu *et al.* reference is not prior art to Applicants' claimed invention.

Enclosed please find a certified copy of the priority document and an English translation thereof, which should remove this publication as prior art. Therefore in view of the above, withdrawal of this rejection is respectfully requested.

VII. REJECTION UNDER 35 U.S.C. §103(a)

Claims 27, 32 and 37 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 88/05785. Claims 27 has been canceled, thus the rejection is moot with respect to this claims. For the following reasons, this rejection is respectfully traversed.

As stated above, WO 88/05785 as set forth in the translated U.S. counterpart, U.S. Patent 5,599,542, does not disclose the sequence set forth in Claim 32, as evidenced in Annex I, but rather discloses the non repetitive region of SEQ ID NO: 38. Furthermore, there is no incentive or motivation to modify the sequences set forth in this patent.

Therefore, Claims 32 and 37 are not obvious in view of WO 88/05785. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 27 and 35 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 to 6 of U.S. Patent No, 5,602,031. For the following reasons, this rejection is respectfully traversed.

Claim 27 has been cancelled. Claim 35 recites the sequence:

Ser-Asp-Leu-Glu-Gln-Glu-**Arg-Arg**-Ala-Lys-Glu-Lys-Leu-Gln-Glu-Gln-Gln.

In contrast, the closest sequence to the above sequence in U.S. Patent No. 5,602,031 discloses the sequence:

Ser-Asp-Leu-Glu-Gln-Glu-**Arg-Leu**-Ala-Lys-Glu-Lys-Leu-Gln-Glu-Gln-Gln or
Ser-Asp-Leu-Glu-Gln-Glu-**Arg-Leu**-Ala-Lys-Glu-Lys-Leu-**Gln-Gly-Gln-Gln**

There would be no motivation to change the Arg at amino acid position 8 to Leu, since these two amino acids are quite different; i.e., one is neutral and one is basic. Therefore, in view of the above, withdrawal of this rejection is respectfully requested.

From the foregoing, favorable action in the form of a Notice of Allowance is respectfully requested and such action is earnestly solicited.

Applicants respectfully request that if there should be any questions regarding the foregoing amendments or remarks that the Examiner call the undersigned. The Commissioner is hereby authorized to charge any fee deficiency or credit any overpayment of fees to Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY LLP

Date: January 16, 2007 By: _____

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858.509.7300

[ ] Claim 32.

[ ] sequence of Guerin-Marchand U.S. patent 5,602,031 U.S. Patent 5,599,542

Lys Glu Asn Lys Leu Asn Lys Glu Gly Lys Leu Ile Glu His Ile Ile
115 120 125

Asn Asp Asp Asp Asp Lys Lys Lys Tyr Ile Lys Gly Gln Asp Glu Asn
130 135 140

Arg Gln Glu Asp Leu Glu Glu Lys Ala Ala Lys Glu Lys Leu Gln Gly
145 150 155 160

Gln Gln Ser Asp Ser Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln
165 170 175

Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu Lys Leu
180 185 190

Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
195 200 205

Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu
210 215 220

Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys
225 230 235 240

Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
245 250 255

Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu
260 265 270

Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg
275 280 285

Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
290 295 300

Arg Arg Ala Lys Glu Arg Leu Gln Glu Gln Gln Ser Asp Leu
305 310 315

* Leu in 5,602,03 or Gly in 5,602,031

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Arg Ile Asn Glu Glu Asn His Glu Lys Lys His Val Leu Ser His Asn
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